channel inhibition which underscores the probable chiral nature of the putative endogenous hormone, which has yet to be discovered.

More recently several dissymmetric nifedipine analogs have been developed which surprisingly exhibit calcium channel agonism and stimulate cardiac and smooth muscle contraction (M. Schraum & al., Nature 303, 535-537 (1983); A. G. Truog, oral presentation at FASEB meeting, Chicago, April 1983). A diffraction study on the first of these agonist compounds, BAY K 8644, has revealed that this compound has the flattest DHP ring of all the nifedipine analogs examined to date. Thus it appears that this conformational feature is not a characteristic of calcium channel antagonism, but rather a common feature which allows both agonists and antagonists to bind to the same DHP calcium channel receptor. Agonist or antagonist response must be encoded in other stereochemical and electronic characteristics which may be differentiated by the receptor. The crystal and molecular structure of BAY K 8644 suggests that the agonist behavior of this compound may in part be associated with a strong positive charge on the amine group brought about by a delocalization of electrons in the DHP ring as a consequence of the electron withdrawing effect of the 3-nitro substituent.

Crystal data: BAY K 8644, C_{16}H_{15}O_{4}N_{2}F_{3}·C_{4}H_{9}O·2C_{4}H_{9}NO, Mr = 356.3, monoclinic, P2_1/c, a = 10.762(2), b = 12.762(2), c = 12.603(2) Å, β = 108.61(2)°, V = 1641 Å^3, Z = 4, D_{calc} = 1.44 gm cm^-3, R = 0.064 for 4059 data with F > 2σF.

Research supported in part by Grant No. HD32303 from the National Heart, Lung, and Blood Institute.

03.3.4-6 SELECTIVITY AT THE 6-OPTATE RECEPTOR: THE STRUCTURES OF α- AND β-PFAEDRIMINE. Jon F. Griffin, Medical Foundation of Buffalo, Buffalo, NY 14203 and P. S. Portoghese, University of Minnesota, Minneapolis, Minn. 55455.

α- and β-Pfaudranimine (α- and β-PFA) are naltrexone derivatives differing only in chirality at C-6. Both α- and β-PFA bind to the μ opiate receptor in guinea pig ileum and mouse vas deferens preparations, but only the β-epimer selectively alkylates this receptor in both preparations. For this reason, PFA has been used to "knock-out" μ receptors and study the remaining μ sites in these preparations and δ and κ sites in brain homogenate preparations. Sayes et al. (J. Med. Chem., 22, 1229-1235 (1983)) proposed a two step recognition process at the μ site with only the β-epimer in the proper orientation for the second recognition step which results in alkylations. Recent X-ray studies of 6α- and 6α-oxymorphamidine showed that the conformation of ring C was dramatically influenced by the stereochemistry of the 6-aminogroup: the 6β-epimer existed in a chair conformation and the 6α-epimer in the twist-boats conformation.

We have now determined by X-ray diffraction studies the molecular structures of both α- and β-PFA. The two epimers have almost identical conformations in the fused ring moiety except for ring C: in α-PFA ring C is observed in a twist-boat conformation, and in β-PFA ring C is in a chair conformation. The ring conformations result in the furamate chain on C-6 being equatorial to ring C in both compounds. The furamate moieties are approximately orthogonal to one another in the two structures.